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Circular Letters:

A Consideration of Certain Public Health Aspects of Defense Against Biological Warfare: Part II: What constitutes our defense?

Since anti-human biological warfare, in certain respects, is essentially preventive medicine in reverse, it follows that those in public health work must form the bulwark of defense against it, just as the plant pathologists, veterinarians, and others in the Federal and State Departments of Agriculture must assume responsibilities for defense against the anti-crop and anti-animal BW possibilities. Every competent epidemiologist, physician, bacteriologist, veterinarian, nurse, or sanitarian who is well informed regarding the communicable diseases has already acquired, by training and experience, the important general information necessary to the formulation of many civil defense principles. For the purpose of stimulating though and action by public health workers who will be concerned with civil defense, a few such principles are presented:

1. Civil defense in the BW field must be coordinated with defense against other forms of warfare. The over-all plans for hospitalization and other facilities for handling casualties should include provisions for ordinary communicable disease technics.

2. BW agents produce the usual disease characteristics of the given agent, although the clinical course may be expected to vary somewhat. This variation might be a reflection of an unusually high dosage of infecting organisms, perhaps acquired via an unusual portal of entry, or of the simultaneous occurrence of two or more diseases. In the latter case it is not impossible to conceive that our enemy might disseminate the germs of more than one disease at a time, thus complicating the problems of diagnosis and therapy. Clinicians, laboratory technicians, and epidemiologists must be alert to this possibility.

3. Management and control of communicable diseases, including isolation and quarantine procedures, remain the same whether the diseases occur in the natural course of events or are introduced through the use of BW. The measures for prevention of secondary cases and the methods of treatment in current use could be expected to be applicable, and thus to minimize the effects of any outbreak due to a BW agent. The institution of early epidemiological investigations and controls is dependent upon rapid reporting of communicable disease occurrence.

4. Preparedness for rapid diagnosis and therapy is important not only for those diseases of usual, or endemic, occurrence, but also for those considered exotic or of unlikely occurrence except by artificial dissemination. Such preparedness requires a strengthening of communicable disease diagnostic laboratories and the establishment of firm liaison with laboratories capable of procedures which may not be available locally, such as those for the diagnosis of viral and rickettsial diseases.

5. Plans for availability of chemotherapeutic and antibiotic substances should be made. The availability of these substances for therapeutic use in cases of communicable diseases is imperative. Their use for mass prophylaxis following a suspected biological warfare attack might be feasible only under certain

circumstances. A recovery and rapid identification of the particular agent used, coupled with the knowledge that the agent is usually susceptible to one or another of these substances, would be important. Shotgun prescriptions of such substances are not recommended, since they might accomplish little and would deplete vital supplies. Their use under such circumstances should parallel their use in naturally occurring outbreaks.

6. Immunization might be presumed to afford a measure of specific protection against potential BW agents. However, effective vaccines do not exist for many of these agents, although some vaccines are available and research continues to provide others. Information regarding the particular species, types, or strains which might be used by an enemy might enable the use of a few specific vaccines, but it is considered futile, at this time, to attempt hit or miss guesses.

7. Gas masks afford considerable protection and would be of value if an adequate warning of probable biological or chemical attack can be given. Masks for civilian use are under development along with those for military personnel.

8. Food and drinking water, if suspected of contamination by biological warfare, may be sufficiently sterilized by adequate cooking or boiling.

9. Public health authorities must be prepared to cope with the panic which any unusual incidence of disease is apt to cause. Panic is often associated with the unknown. In this respect, the educational media of the radio and press can be profitably utilized in much the same manner as they are presently used to allay the fear of naturally occurring epidemics.

10. The speed of modern transportation, considered together with the incubation period of disease due to potential agents capable of person to person spread, is as important a factor in BW as in naturally disseminated disease. Therefore even these hundreds of communities in this nation which might be considered unlikely targets for direct BW attack must be prepared to cope with Civil Defense problems associated with the possible indirect effects of attack elsewhere.

11. Specialized training involving access to the more highly classified biological warfare information for a few well-qualified epidemiologists and public health personnel in key state, territorial, or local positions is desirable and contemplated. Such training for defense has already been instituted among key personnel in several Federal agencies. These individuals would make themselves available for assistance and advice in the event of suspected or actual biological warfare attack.

12. The task of coordinating and planning for a program of civil defense has been charged to the National Security Resources Board. After several conferences between representatives of the National Security Resources Board, the Department of Defense, the Public Health Service, and the Bureau of Animal Industry, a unanimous agreement was reached to downgrade the security classifications of certain aspects of biological warfare defense in order to release needed information to appropriate State and municipal public health officials.

For such persons the Public Health Service has been designated as the appropriate agency to conduct courses of instruction in civil defense against

anti-human biological warfare. Courses of instruction have already been prepared and suggested curricula have been presented to the National Security Resources Board for consideration. It is anticipated that arrangements will be completed in the near future and that the information contained in these courses for health department personnel will thereafter be disseminated to the various agencies and professional associations having a direct interest in this subject. (CDR F. R. Philbrook, MC, USN, Preventive Med. Div., BuMed. Released by PIO, Dept. of Defense)

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The Utilization of Streptokinase-Streptodornase: The rapid lysis of blood clots and related coagulum of exudates takes place, as shown by Tillett and Sherry, when concentrated and partially purified preparations derived from broth cultures of hemolytic streptococci are instilled into them. These preparations are unique in their action in that they show rapid lysis of fibrin clots, alter fibrinogen so that it no longer forms fibrin, and cause the insoluble fibrouslike nucleoprotein found in purulent collections to dissolve.

The fibrinolytic activity of hemolytic streptococci was discovered by Tillett and Garner but only recently has this property been extensively purified and concentrated by Christensen. The filtrates containing the active principles are recovered from broth cultures in large amounts, free of bacteria. More recently, Sherry, Tillett, and Christensen showed a significant constituent present in pus consisted of desoxyribonucleoprotein, forming from 30 to 70 percent of purulent sediment. Tillett, Sherry, and Christensen demonstrated a second enzyme, streptodornase, that changed the thick viscid nucleoprotein to a thin solution.

The streptococcal fibrinolysin product has been termed "Streptokinase" and the nucleoprotein lysing factor "Streptodornase."

Although the enzymatic activity is chiefly present in human Group A hemolytic streptococci, the products under discussion are derived from the Lancefield Group C, H46A strain since it is a nonpathogen for man and would, therefore, be least likely to obscure the clinical picture by any serious toxic side-reactions.

Streptokinase acts very much like a catalyst but it is depleted as the dissolution of the parent substance takes place. Consequently its action in patients is self-terminating. It has been shown that a precursor present in bloody collections and exudates termed plasminogen or activatable fibrin-lysing system is needed to effect fibrin lysis. This is illustrated in experimental studies by the failure of a clot to lyse when highly purified fibrinogen and thrombin are mixed with SK (streptokinase). However, with the addition of plasma Fraction III, which contains the plasminogen, lysis occurs quickly. No activatable substance is required for the lysis of the nucleoprotein per se since SD (streptodornase) is an active enzyme.

The enzymes used in the early studies were produced in the laboratory of Dr. Christensen, but more recently sufficient amounts are being manufactured commercially to carry on large scale clinical studies. The details of the purification and the original investigative results with the enzymes appear in earlier reports by Tillett and Sherry and Christensen. In a forthcoming report by Tillett, Sherry, and their associates a comprehensive analysis of the dosage, laboratory findings, and a review of clinical data relative to hemothorax will be discussed.

The enzymes as now prepared in lyophilized form appear mixed together with varying amounts of either increment but usually with predominant portions of SK. Although probably not required in cases of hemothorax the presence of SD is not contraindicated nor does it detract from the action of SK. In this report the authors consider the clinical application of SK.

On the Chest Surgical Service, and others, at Bellevue Hospital and at neighboring institutions where the material has been allotted by and used under the direction of Dr. W. S. Tillett and those associated in the work, SK has been used in a number of patients. The results for the most part have been good and in several instances dramatic. The procedure consists of the instillation of the enzymes in specified dosage followed by aspiration within a specified time.

Whenever blood appears in the thorax there is a good possibility that it will clot despite early attempts at aspiration, and frequently it is permitted to remain unmolested with the hope that it will resolve spontaneously. Large accumulations often defy prompt attempts at complete aspirations as they assume a gel form, and therefore demand more attention than small collection which frequently vanish without any treatment. Massive clotting has been observed 4 to 6 hours following trauma and in less time when secondary thoracotomy has been mandatory subsequent to an initial procedure. In such instances aspiration will be of little avail.

Fibroblastic proliferation within a clot, which may appear within 5 days, leads to organization and this in turn precludes further conservative management. Such evidence should prompt one to evacuate the hemothorax as soon as possible.

Little has been added to the management of hemothorax since the excellent observations of Tuttle, Langston, and Crowley and Samson, Burford, Brewer, and Burbank and others reporting during the war years. These authors suggested that about 15 to 20 percent of hemothoraces seen in wounds of the thorax progressed to a chronic stage requiring operative treatment, whereas in civilian practice the incidence is more in the neighborhood of 5 to 10 percent.

Whatever the incidence, the attitude toward significant bloody accumulations should be an aggressive one and every attempt made to evacuate the thorax

completely and promptly. With such an approach the necessity of decortication diminishes and the re-establishment of pulmonary function is enhanced. With the addition of SK to his armamentarium the surgeon is offered additional means whereby the management of hemothorax may be accomplished effectively. Furthermore, when injuries and wounds of the chest occur in large numbers, as in war, the value of these agents will be increased. Striking as was the improvement in the treatment of wounds of the thorax in World War II, the use of streptokinase and streptodornase should lower materially the 15 to 20 percent of cases of clotted hemothorax already referred to, and so reduce appreciably loss of man power. (J. Thoracic Surg., September '50, C. T. Read and F. B. Berry)

NOTE: A detailed report consisting of the procedures used and the results obtained from the use of SK and SD appears in the same issue of the Journal of Thoracic Surgery by S. Sherry et al.

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Aluminum Gels in the Management of Renal Phosphatic Calculi: The phosphatic variety of renal calculi are commonly the most difficult to manage, both in the prevention of recurrence after operative removal and the inhibition of further growth of the stones in situ. It is estimated that the incidence of recurrence is approximately 40 percent. A number of factors apparently contribute to this high recurrence rate. The coexistence of urinary tract infection is of major importance. There are pathological effects of bacterial infection on the renal pelvis; moreover, the urea-splitting properties possessed by the most frequent bacterial offenders result in a highly ammoniacal urine favorable to the precipitation of calcium and phosphate ions. Anatomic or pathological obstructions to urine flow are frequently associated with phosphatic stones, and in a small number of patients phosphatic calculi arise from systemic metabolic disturbance. The treatment usually employed in the management of phosphatic calculi is the acidification of the urine by means of acid-ash diets or acidifying agents. Unfortunately, this therapeutic approach is distinctly limited in effectiveness in many cases.

The authors in a previous report called attention to the possible usefulness of a new therapeutic regimen whose effectiveness was not similarly limited. This approach consisted in the use of aluminum hydroxide gels to bring about appropriate alterations in the chemical composition of the urine so that it would be unfavorable for the precipitation of phosphate ions. The rationale for this regimen resides in the formation of insoluble aluminum phosphate salts in the intestinal tract and the corresponding reduction in the amount of phosphorus available for absorption. The experience reported in the previous report has now been amplified with respect to both the number of patients under study and the duration of the therapy.

The present study comprises 22 patients, 16 men and 6 women who have been under observation and treatment in the Endocrine Clinic of the New York Hospital for 2 to 7 years. The patients were followed in the Clinic with monthly or bimonthly urinary phosphorus, calcium, and creatinine determinations; x-rays of the kidneys, urine analyses and cultures; and estimations of fasting serum calcium, phosphorus, protein, and alkaline phosphatase performed at frequent intervals. The following preparations from one source were utilized throughout the study: amphojel, amphojel tablets, amphojel with magnesium trisilicate and basaljel. All were administered in equally divided doses 1 hour after meals and at bedtime. The range of daily dosage was as follows: amphojel and amphojel with magnesium trisilicate 90 to 200 cc., amphojel tablets 40, and basaljel 80 to 180 cc. The constipating effect varied from patient to patient and from time to time in the same patient and was controlled by cathartics of the patient's choice sufficient to insure a daily bowel movement.

To assist the ambulatory patient in the selection of an appropriate diet, a sample menu was constructed. This provided between 1,200 and 1,300 mg. of phosphorus daily and approximately 700 mg. of calcium. The diet was adequate with respect to other nutritional and vitamin requirements. Instruction in use was given by a staff dietician. In addition, the patients were given a diet detailing foods that were permissible and those excluded because of excessive phosphorus content.

In the study it became evident that patients can take aluminum gels in amounts of from 120 to 180 cc. daily for as long as 7 years without experiencing untoward effects attributable to the medicament. Constipation, when it occurred, was readily corrected by the judicious use of cathartics. There were no changes in the plasma carbon dioxide content. Relief from dysuria with clearing of the urine was frequently reported. Most of the patients tolerated the gels well. With all preparations the objective of treatment, a significant reduction of urinary phosphorus, could be achieved. Basaljel proved approximately 35 percent more effective in lowering urinary phosphorus than the standard aluminum hydroxide gel preparation.

The chief problem is one of gaining the patient's cooperation in having him follow a diet with a constant phosphorus content. This is achieved with a menu flexible enough to conform with food habits and accessibility.

The evaluation of the therapeutic results should be tempered by an appreciation of the small number of patients in this study. A high percentage had required frequent operative interference, and in more than half of the cases there was gross infection of the urinary tract favorable to stone recurrence. In this study the results with aluminum gel therapy appear to be distinctly superior to other reported procedures. In the 22 patients there were 36 kidneys which had been sites of previous phosphatic calculi or had stones present at the time treatment was instituted. There were no recurrences in the 6 kidneys from

which calculi had been removed; and in only 3 of the 30 kidneys with stones in situ, was there any increase in the size of the stones. Stones were passed completely from 4 kidneys and reduced in size in 3. Four patients, who voluntarily discontinued the treatment, developed stone growth of such magnitude that operative removal was required.

This therapeutic regimen is not intended to replace surgical intervention where indicated. Its use has been found beneficial in postoperative management and as an adjuvant in the management of patients requiring enforced immobilization, such as paraplegics.

The results obtained in this series of 22 patients are regarded as highly favorable, judging from the absence of recurrence in 6 kidneys which were the sites of previous stone formation and from the fate of the stones in 30 kidneys containing calculi when treatment was instituted. (J.A.M.A., 30 December '50, E. Shorr and A. C. Carter)

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Prognosis in Bundle Branch Block: From the time of the first experimental studies of lesions of the bundle branches the clinical implications of this electrocardiographic finding have been of great interest to physicians. The studies of Wilson and his associates and of others have done much to clarify the terminology, so that there is now general agreement concerning the electrocardiographic patterns of right and left bundle branch block.

A review of the literature reveals a lack of unanimity of opinion in regard to the prognostic significance of this abnormality. Different observers using different criteria and dissimilar methods of study have ended with figures which show a corresponding dissimilarity. The early studies all included cases in which the QRS intervals were less than 0.12 second and frequently neglected to separate right and left bundle branch block. In early series there was a preponderance of the left branch type of block, and almost without exception a pessimistic view of prognosis was expressed.

Graybiel and Sprague, on the basis of a series of 395 patients, stated that "bundle branch block almost invariably indicates serious organic disease; the average duration of life of 223 fatal cases in this series, after discovery of the conduction fault, was 1 year and 2 months, but 85 other patients are still alive after an average of 2 years and 11 months. With few exceptions, the patients still living are either seriously limited in their activity or are actually in some stage of cardiac decompensation." This reflects, in general, the opinion of others at that time (1933).

Oppenheimer, Rothschild, and Mann, on the basis of observations on 10 patients with right bundle branch block, point out that patients with this type of

electrocardiographic pattern might have a better prognosis than those with the more common type of bundle branch block. Others confirmed these observations. Wood, Jeffers, and Wolferth suggested that when definite evidence of heart disease was present the patients seemed to follow the expected clinical course without regard to abnormality of the QRS complex. Perera, Levine, and Erlanger found the prognosis to be definitely better in a group of 104 patients with complete right bundle branch block which was compared with 60 patients with complete left bundle branch block. Freund and Sokolov, in an analysis of 210 patients with bundle branch block, found that patients with right bundle branch block had a slightly better outlook than those with left, but their figures were much less favorable than those of Wood and associates and of Perera and associates. The studies of Sampson and Nagle and of Bishop and Carden, although differing in criteria, demonstrated a better prognosis for left branch block than did those of previous investigators.

A variety of factors accounts for the divergent results obtained in these follow-up studies. Most important of these are: (1) different criteria in selection of the patients, as, for example, inclusion of patients with QRS conduction time of less than 0.12 second; (2) failure to separate right and left bundle branch lesions; (3) dissimilar methods of grouping and presentation of the data; and (4) variation in the taking of electrocardiograms as a routine procedure in the absence of clinical evidence of heart disease. It is the authors' impression that intraventricular block will become an increasingly frequent finding as electrocardiographic tracings become a routine part of a complete examination or of preoperative evaluation of the older patient.

The problem of prognosis in relation to this lesion is twofold: namely, that of the patient with no, or minimal, symptoms of heart disease, and that of the patient with definite clinical evidence of various types of heart disease. Figures on a large number of "normal" individuals for proper evaluation of the former problem are still inadequate. This report, for the most part, deals with patients who fall in the latter group.

In the first part of this study, only the factors which influence the survival time in right bundle branch block are considered. The authors plan to analyze the left branch type in a similar fashion in a later communication and then to compare the two electrocardiographic patterns with regard to the above factors as well as to their relative incidence. The indeterminate, intermediate, or incomplete types of bundle branch block are not considered in this study.

The factors influencing the prognosis of right bundle branch block were analyzed in a series of 281 patients electrocardiographed at the Massachusetts General Hospital. The most important of these was found to be the underlying heart disease, both as to type and to degree. The highest degree of correlation was found to exist between heart size and survival time. Rheumatic and obvious coronary heart disease had the least favorable outlook, while right bundle branch

block in the absence of a clear etiological factor (sometimes called "asymptomatic" coronary heart disease, manifested by the electrocardiographic abnormality alone) had the best outlook.

There was a preponderance of male patients of almost 3 to 1. Female patients tolerated the lesion somewhat better than male. The mortality rate was fairly constant between the ages of 50 to 80 years, slightly higher in the 30 to 40 year age group (probably because of the rheumatic patients), and markedly increased after the age of 80 years, as would be expected. The patients who survived the first year of follow-up did better than the total group.

Survival for longer than 5 years after the discovery of the right bundle branch block was known in the case of 72 patients who could be followed: of these 72, 17 were dead at the time of this follow-up study, while of the remaining 55, there were still 41 alive, and 14 were lost at various intervals after being followed longer than 5 years. This group of 72 patients makes up 27 percent of the entire series of 281 patients and 39 percent of the 186 who could be traced. Death within 1 year was known in the case of 45 patients who could be followed (16 percent of the total series and 24 percent of those traced), but it is likely that a considerable number of the 49 patients not traced at the end of the first year died during that year.

The prognosis of right bundle branch block is therefore very variable and is dependent on the prognosis of other clinical abnormalities, in particular, angina pectoris and cardiac enlargement. Although itself an indication of some degree of heart disease, it is not infrequently found in persons surviving more than 5 years after its discovery. (Am. Heart J., December '50, Shreenivas et al.)

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Use of a Detergent (pHisoderm) Combined with Hexachlorophene for Skin Disinfection: Preoperative sterilization of the skin of patient and personnel has been shown to be the weakest link in the chain of sterile technic. This report reviews the results of a clinical trial for one calendar year of a combination of a detergent (pHisoderm) with a new antiseptic (3 percent hexachlorophene) for the preoperative sterilization of both the operative field and the hands of the operating personnel.

Previous experimental studies have shown that routine use of hexachlorophene (formerly known as G-11) resulted in a rapid, decided, and permanent fall in the resident bacteria of the skin and that the apparent retention of hexachlorophene in the skin resulted in a cumulative bacteriostatic effect on the resident flora. Guild showed that pHisoderm, a detergent cream composed of a sulfonated ether petrolatum, lactic acid, and wool fat cholesterols possessed active emulsifying, sudsing, and dispersing properties with a surface activity

estimated to be about 40 percent greater than that of soap. It yielded no objectionable end products on hydrolysis, and, having a pH of 5.5, preserved the normal acid pH of skin. Hufnagel, Walter and Howard, in a comparative study of multiple determinations of the flora of skin under standardized mechanical conditions after the use of various detergents and germicides, showed that 3 percent hexachlorophene in a sulfonated detergent (pHisoderm) displayed the most rapid disinfecting action.

In view of the experimental evidence presented of the superiority of this combination of pHisoderm and hexachlorophene, a clinical trial of this material was attempted. For one calendar year, throughout the entire surgical services, 3 percent hexachlorophene in pHisoderm was used exclusively for preparations of the skin of patients and personnel as outlined here.

Hand and Arm Scrub for Personnel

1. Scrape the subungual spaces with tip of nail file.
2. Wet hands and arms thoroughly. Using 2 cc. of detergent on skin of each hand, wash arms and hands. Rinse completely.
3. Repeat and, using brush, develop an anatomic scrub so that every area of the skin receives 15 brush strokes and the nails 25.
4. Rinse with tap water.

After practicing, this takes 2 minutes.

Preparation of Patient's Skin

1. Apply 5 cc. of pHisoderm with hexachlorophene to the skin and, using gauze sponges wet in sterile water, develop a lather.
2. Shave the area and wipe clean.
3. Add 5 cc. of the agent and continue the scrub for 4 minutes.
4. Wipe off the lather with a wet sponge and blot dry with a sterile towel.

In vascular, plastic, and orthopedic cases the scrub is repeated daily 4 days prior to operation. In other elective cases the operative area is prepared the evening before. In emergency cases there is but one preparation. No other antiseptic is used at any time. At the time of the removal of the sutures and as part of every dressing, the wound is washed carefully with pHisoderm and hexachlorophene for 1 minute and the suds removed with a moist sponge.

On the institution of this study no attempts were made to change the operative technic by any directions to medical or nursing personnel. All other germicides were removed, soap dispensers replaced with those for pHisoderm and hexachlorophene compound and instructions issued for scrub. To study the wound healing a standard form was prepared which was attached to each chart in the operating room and completed by the resident in charge of the case.

All wounds were classified as clean, potentially contaminated, or infected. Wound healing was assayed as to primary union, reddened skin edges, increased induration, stitch abscess, partial infection and total infection. Seromas and hematomas were cultured, but if the cultures were sterile, they were not reported as infections. All wounds in which primary closures were attempted were included, with the exception of those drained over 48 hours (such as ureterolithotomy wounds).

Ninety percent of the operative procedures were carried out by the junior staff corresponding to the status of residents. Nonabsorbable sutures were used routinely. The operating rooms did not have ultraviolet radiation, air conditioners in use did not have water or chemical humidifiers, and the majority of the surgical wards were not air conditioned. This last circumstance, in central Texas where temperatures often exceed 100° F., should have permitted more preoperative and postoperative contaminations from perspiration.

A total of 1,131 operative incisions were studied, with an over-all incidence of 21 infections, or a gross infection rate of 1.85 percent. In a review of 561 clean major operative wounds, 5 infections were found, an incidence of 0.9 percent. Of these, 3 were stitch abscesses, 1 was a partial wound infection after the removal of a Smith-Petersen pin, manipulation and the insertion of a Moore nail, and 1 was a severely infected hematoma in a herniorrhaphy. This last was the sole infection which could be classified as a serious, unexplained infection in the entire series of 1,131 wounds. With the omission of the 3 stitch abscesses, the corrected rate of infections in clean operative wounds was 0.36 percent.

In 283 major operative contaminated or potentially contaminated wounds, 11 infections were found, an infection rate of 4 percent. All but 11 were classified as either partial or minor wound infections, and all but 1 cleared rapidly under appropriate therapy. One resulted in a bowel fistula which had to be repaired at a later operation. Only 5 of the infections were believed to have been caused by contamination of the skin.

Conclusions. 1. Clinical trial of 3 percent hexachlorophene in pHisoderm for the preoperative preparation of the hands of the operating personnel and of the operative site over a period of 1 year has corroborated experimental evidence and earlier studies revealing that it is a rapid atraumatic, nonsensitizing, disinfectant detergent of wide application which has maintained a low rate of postoperative wound infections due to skin bacteria.

2. A 2 minute scrub with this combination of detergent and antiseptic is at least equivalent to the routine 10 minute surgical scrub.

3. Three percent hexachlorophene in pHisoderm can be safely used for preparing the operative field, and in elective surgery advantage can be taken of its prolonged bacteriostatic effect by a simple preliminary 4 day preparation. (Arch. Surg., December '50, B. S. Freeman and T. K. Young, Jr.)

The Conservative Treatment of Fractures in Children: Open reduction and internal fixation are definitely of value in selected cases but are usually not necessary in the management of fractures in children and are very likely to do irreparable harm. Fractures in children are physiologically unlike fractures in adults because the forces obeying Wolff's law are present, the rate of healing is much faster, and longitudinal and circumferential or appositional growth factors are present. These three physiological actions allow considerable leeway in the accurate replacement of the fragments, and normal function without deformity is the rule, provided these forces of nature are not interferred with by repeated manipulation or open operation. In fractures of the long bones, good alignment, or even fair alignment, and contact of the fragments are all that are usually necessary for an ultimate good result. In general, satisfactory apposition of the fragments, moderate overriding, and even angulation of less than 10 degrees are not too important. It is understood that fractures in children should be accurately reduced and adequately immobilized, if possible, to hasten return to normal function.

Operative interference must be resorted to in certain cases in which there is evidence of soft tissue interposition of nerve injury, circulatory injury which may result in Volkmann's ischemic contracture, and in certain cases in which satisfactory reduction was prevented by extrinsic factors beyond control or complicated by abdominal or head injuries. In patients with fractures that have been manipulated repeatedly under fluoroscopic control, further use of the fluoroscope cannot be considered and this may also be a reason for operative intervention. It is in this type of case that knowledge of the aid to be expected from the physiological factors will allow intelligent management by expectant treatment with eventual restoration of normal function and the attainment of a satisfactory cosmetic result. Conservative management with observation will usually allow a good functional result, and several years later upon roentgenological comparison the appearance of the extremity is indistinguishable from that on the opposite side.

Open reduction should be reserved for replacement of: (1) fractured head of the radius, (2) certain displaced fractures of the internal epicondyle and external condyle of the humerus, (3) fractures of the neck of the femur, (4) fractures of the olecranon or patella with wide separation of the fragments (rare), and (5) irreducible separation of the distal epiphysis of the femur. Prolonged observation of inaccurately reduced fragments is much superior to surgery and will allow the law of functional adaptation to restore normal bone contour and normal function of the extremity. (Surg., Gynec. & Obst., January '51, R. T. Odell and S. M. Leydig)

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Tracheotomy in the Management of Severe Head Injuries: Although it is generally agreed that maintenance of an almost perfect airway is of supreme

importance in patients unconscious from head injuries, the use of tracheotomy for this purpose has been neglected. The airway is of first importance because of its aid in the prevention of cerebral anoxia, a devastating sequel to craniocerebral trauma. Whereas anoxia may be due to anemia produced by loss of blood, shock, or increased intracranial pressure, it most commonly follows secretional respiratory obstruction. To provide proper aeration of the lungs and thereby prevent this common cause of anoxia the following measures are in general use at the present time in most hospitals: (1) rubber oral airway which holds the tongue forward; (2) lateral position of the patient with intermittent elevation of the foot of the bed so that secretions in the tracheobronchial tree may drain from the mouth by gravity; (3) urethral catheter to aspirate secretions from the pharynx, larynx, trachea, and bronchi; (4) oxygen by nasal catheter, mask, or oxygen tent; (5) aspiration of the tracheobronchial tree through a bronchoscope; and (6) endotracheal tube for periods up to 48 hours. Although one or more of these measures suffice in the majority of cases of head injury, the authors believe that more attention to the respiratory requirements of the severely injured is needed if the mortality is to be lowered.

Tracheotomy is beneficial in non-surgical patients who, because of coma, require aspiration for prolonged periods. The authors have used tracheotomy for relief of respiratory difficulties with gratifying success in 25 patients with nontraumatic conditions, including such lesions as brain tumor, cerebral abscess, meningitis, encephalitis, aneurysm, and apoplexy.

An adequate airway may be obtained in patients with severe head injury by endotracheal intubation or tracheotomy. The other methods in common use are inadequate or difficult to maintain in patients with severe head injuries who have serious respiratory problems. Endotracheal intubation and tracheotomy allow instant and repeated tracheal suction, as well as the administration of oxygen. Pneumonia from aspiration is prevented. Feeding by stomach tube is safe in tracheotomy and in endotracheal intubation when a cuffed tube properly inflated is employed.

The use of an endotracheal tube is indicated in those cases in which the respiratory difficulty is likely to be resolved in 12 to 20 hours. Its use for longer periods is unsatisfactory, as the diameter of the lumen becomes lessened by layers of inspissated mucus, and edema of the larynx may make reintubation difficult or impossible. Also, the trauma of repeated intubation and the continuous pressure exerted by the indwelling tube may lead to unavoidable ulcerations of the upper respiratory pathways should the endotracheal tube be used for long periods of time.

Tracheotomy should be performed when the respiratory difficulty can be expected to last for more than 24 hours. For a given case it may be difficult to choose between the 2 methods at the time of the patient's admission to the

hospital. In such cases an endotracheal tube may be used for the first 24 hours and at the time of its removal tracheotomy can be performed should the respiratory problem persist. The authors have found it practical, however, to perform tracheotomy initially if doubt arises as to the method of choice. This is especially true in patients with injury of the maxillo-facial structures or nasopharynx, as endotracheal intubation may be hazardous in such cases.

The occasional failure of a patient to regain adequate respiratory exchange after tracheotomy may be due to a disturbance of the acid base equilibrium, uremia, traumatic hemothorax, traumatic rupture of the lung, pneumothorax, exsanguination, pulmonary edema, or damage to the respiratory center. Before it is assumed that a damaged respiratory center is responsible for a deficient exchange after tracheotomy, a careful search should be made to exclude the other possible causes. (Surgery, November '50, D. H. Echols et al.)

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Iron Deficiency, Iron Therapy, and Injectable Iron: Chronic iron deficiency is usually noted during certain "stress" periods of the life span. It occurs in the infant who has been subjected to repeated infections and whose diet has been unusually low in iron ("nutritional hypochromic anemia of infancy."). It is occasionally found, even now, in the adolescent girl with achlorhydria and menorrhagia ("chlorosis") and more frequently in the adult woman who has been through numerous pregnancies, menorrhagia between pregnancies, and perhaps in addition, an inadequate diet and achlorhydria. The latter condition was formerly called "idiopathic," "primary," or "achlorhydric," hypochromic anemia. In adult males with hypochromic anemia, chronic blood loss must always be a first consideration. Thus, in every case of "low color index" anemia it is absolutely imperative, as Moore recently stated, to search out every possible cause for chronic bleeding. In most instances, this is gastrointestinal in origin, since the loss of blood from other sources is usually readily noted.

The treatment of iron deficiency anemia, like that of any other anemia, depends upon establishment of the underlying cause, and in turn upon its correction. Although blood loss is at the bottom of most cases, the bleeding could have occurred sometime in the past, and the present situation might, therefore, be one of almost pure chronic iron deficiency. For treatment this requires the administration of adequate amounts of iron. Ferrous iron has become established as the material of choice, and ferrous sulfate, and more recently ferrous gluconate, have proved highly acceptable.

Attempts to produce an injectable non-toxic preparation have until recently met with a relative degree of failure. Recently, however, stimulated by the work of several British observers, a British pharmaceutical house produced a carefully compounded material of saccharated oxide of iron which could be given in dosages of 100 to 200 mg. intravenously and usually without reaction. More recently, several American pharmaceutical firms have come out with the same or a similar preparation.

The indications for adequate doses of intravenous iron are relatively scant, although they do exist, particularly in the presence of severe gastro-intestinal reactions to oral iron, as in ulcerative colitis or in patients with colostomy or after extensive bowel resections. The use in clinical practice of a good injectable iron preparation must nevertheless be approached with a certain degree of caution, particularly in view of the well known propensity of the physician to favor injectable as against oral therapy. One hundred milligrams (0.1 Gm.) of iron does not seem like a great deal, but evidence indicates that unlike the iron in oral preparations all of it is completely retained. Given in weekly doses, this may soon add up to a sizable and not readily excreted amount.

In the presence of iron deficiency the iron is quickly utilized by the tissues and the bone marrow, but when there is relatively little iron deficiency or when this has been corrected, the iron may accumulate in the tissues and thus lead to hemosiderosis. The development ensues of a typical slate, grey-brown pigmentation of the skin, as seen in individuals receiving numerous transfusions. Every physician should be cognizant of this possibility and of the dangers of chronic iron poisoning. This hemosiderosis is not only distinctly harmful, but irreversible. For this reason, it is probably best to reserve intravenous iron therapy for selected cases of chronic iron deficiency and then only as a temporary measure with due though to the importance of keeping within a calculated dose. (Blood, December '50, Editorial, W. Dameshek)

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Significance of the Sedimentation Rate in Urologic Disease: Most internists consider the sedimentation rate of the red blood cells to be of considerable diagnostic significance. Frequently, complete studies in a diagnostic clinic yield entirely negative results with the exception of an elevated sedimentation rate. In such cases further search must be made to disclose the source of this abnormality. If a urologic lesion is found, the question arises as to whether or not such a urologic disease could be responsible for elevation of the sedimentation rate. Consequently, the authors' own cases in which sedimentation rates have been done were analyzed in an attempt to determine what effect several urologic diseases have upon the sedimentation rate of red blood cells, and to ascertain if alteration of the sedimentation rate might prove to be a significant adjunct to present urologic diagnostic facilities.

Over 600 cases of the commoner urologic diseases were analyzed. Whenever elevation of the sedimentation rate was encountered, associated diseases which might be responsible for the elevation were recorded, but if no other disease existed it was presumed that the elevation was attributable to urologic disease. Since this has been a clinical survey, nothing has been contributed to the understanding of the phenomenon of sedimentation of erythrocytes.

The uncorrected Westergrin method for determination of erythrocytic sedimentation rate was used. Sedimentation rates of less than 20 mm. per hour were arbitrarily considered as relatively normal and only those greater than 20 as significantly elevated.

The authors found that the sedimentation rate has a usefulness in the diagnosis of, and possibly as a criterion of the degree and course of urologic disease. Simple, uncomplicated urinary infections are apparently associated with normal sedimentation rates except when a pronounced febrile reaction occurs. Infection complicated by obstructive lesions or calculi may produce a great increase in the sedimentation rate so that if an increased rate is found, it can justifiably be ascribed to the urologic pathologic condition.

The elevated rates in renal tuberculosis may aid in the exclusion of cases of amicrobic pyuria in which normal rates are encountered. Further, a gradual reduction in sedimentation rate after surgical treatment of urinary tract tuberculosis can be a valuable guide in the postoperative treatment.

It is believed that the sedimentation rate may be a significant adjunct in differentiating benign renal cysts from malignant renal tumors, since an elevated rate was encountered in all of 8 renal tumors in this series in which the test was done. A normal rate indicates a probable diagnosis of benign cyst. However, elevation of the sedimentation rate does not exclude this diagnosis, because of the possibility of concomitant disease. Further, this does not mean that the sedimentation test is the ultimate criterion for a final diagnosis.

In cases of carcinoma of the prostate the sedimentation test was disappointing in assisting in the diagnosis of clinical nodules, since cancer of the bladder and prostate was not consistently associated with an elevated sedimentation rate. However, Kearn's assertion that the sedimentation rate declines and approaches normal in patients receiving hormone therapy may prove valuable as an aid in evaluating the clinical progress of the disease.

The authors reaffirm the already prevailing opinion that the erythrocyte sedimentation rate is a useful simple laboratory examination, which is justifiable as a routine procedure in urologic cases as well as in all others. (J. Urol., December '50, J. Hyman and E. Burns)

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Industrial Health Eye Hazard: In a plant in Pennsylvania the management could not account for a great increase in the cases of conjunctivitis among certain of its employees. Efforts to solve the problem from a community and a plant standpoint failed. There was complete absence of any sign of infection and the use or presence of any contaminant. An ophthalmologist was consulted

who made an extensive examination, even inquiring into the possibilities of an outbreak of conjunctivitis in the area of the city adjacent to the plant. None was found.

The Bureau of Industrial Hygiene was then consulted and the representatives were able to discover the source of the trouble. A survey indicated that the conjunctivitis appeared to be confined to workers operating compressed air apparatus. Compressed air was being used for many purposes in the plant and had seemed to produce no undue results or unhealthy conditions. Housekeeping and safety practices were excellent. Employees were clean, well dressed, and well trained in their work.

Air was supplied by 2 large diesel compressors and 1 gas compressor located in a building separate from the main workroom. It was discovered that these compressors had been recently enclosed and that prior to that time everything appeared to be functioning smoothly. However, not long after enclosing the compressors, the epidemic of conjunctivitis appeared among the workers. Further examination revealed that, in the room where the compressors were installed, the exhaust gases from the engines were piped to the outside atmosphere through flexible tubing, extending only slightly above the roof. The intakes of the compressors drew air from the small room in which these compressors were located. An examination of the flexible tubing indicated numerous leaks which allowed a goodly portion of the exhaust fumes to escape into the compressor room. In addition, some of the fumes which ultimately were exhausted above the roof found their way back into the room through air currents.

It was concluded by the Bureau representatives and the ophthalmologist that the components of the exhaust fumes from the diesels were being drawn in through the intakes and then being reflected into the eyes of the employees.

Following installation of intakes drawing fresh air from the outside of the building, after repair of all leaks in the exhaust pipes, and after the height of the exhaust pipes had been increased to a point approximately 20 feet above the roof, the conjunctivitis epidemic subsided and no further difficulties have been experienced. (January 1951 Industrial Hygiene Newsletter)

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The Occurrence of Renal Insufficiency in Subacute Bacterial Endocarditis: Although renal lesions are a well-known feature of subacute bacterial endocarditis, it is not so generally recognized that these may lead to renal insufficiency. Aside from infarction, embolic glomerulonephritis is the characteristic lesion found in the majority of cases. In addition, the occurrence of banal types of glomerulonephritis has been reported several times to be of high incidence.

Renal insufficiency is, in the authors' opinion, more frequent a sequel of subacute bacterial endocarditis than has been indicated in previous reports. The existence of a "renal form" of the endocarditis, i.e., one in which symptoms of nephritis dominate the clinical picture, is apparently well recognized on the European continent.

The authors reviewed the clinical records, necropsy protocols, and histologic kidney sections of 100 individuals dying of subacute bacterial endocarditis at Bellevue Hospital. Definite evidence of severe renal insufficiency with uremia was obtained in 14 cases, and the probability or possibility of its existence in another 9. In 9 of these 23 the lesion in the kidney was embolic glomerulonephritis. In 9 and 1 additional case without uremia, the lesions were acute, subacute, or chronic glomerulonephritis. The remaining 5 had a combined type of nephritis.

These findings clearly demonstrate that uremia is by no means an infrequent complication of subacute bacterial endocarditis. It occurs as the consequence of embolic, acute, subacute or chronic glomerulonephritis. With the embolic glomerulonephritis the development of uremia requires a fairly severe lesion. The converse is not true; that is, embolic glomerulonephritis in several cases was as widespread and severe as in the group with uremia, but repeated determinations of the blood concentration of non-protein nitrogen failed to reveal azotemia.

The low incidence of positive blood cultures in the cases of glomerulonephritis is in accord with previous observations, but the conclusion cannot necessarily be drawn that a bacteria-free stage associated with hyperergy to the alpha hemolytic streptococcus is involved in its pathogenesis. The reasons for this are:

1. Blood cultures are less frequently made in cases of uremia, since the likelihood of there being an underlying bacterial endocarditis is not so frequently entertained.
2. In 1 of the 3 cases of glomerulonephritis with negative blood culture during life, the Streptococcus viridans was recovered by culture at necropsy.
3. Uremia itself may make it difficult to recover the organism from the blood.

Although treatment of subacute bacterial endocarditis with penicillin causes the Addis count of the urinary sediment to be reduced, it did not reduce the incidence of all types of nephritis or renal insufficiency in those cases that were not cured. The cases in the present series are too few to evaluate the relative degree of healing of the focal lesions as a consequence of such therapy.

It would appear that subacute bacterial endocarditis due to Strep. viridans stands second to beta-hemolytic streptococcus infection as a cause of glomerulonephritis. These considerations should encourage search for, and probably

treatment of, subacute bacterial endocarditis in patients who have disease of the valves of the heart, associated with nephritis and fever. The diagnosis of subacute bacterial endocarditis should be suggested when evidences of renal insufficiency coexist with valvular heart disease and fever. (Am. J. M. Sc., December '50, H. Villarreal and L. Sokoloff)

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Susceptibility and Immunity to Mumps: A class of 100 Tufts College medical students, averaging 22 years of age, volunteered for this study. Their histories of prior mumps attack were collected from the parents, where possible, using the words for mumps in the parent's mother-tongue when this was other than English. Complement fixation tests were then performed on the sera from class members by Dr. Enders. A rather weak correlation between these two criteria was noted. Monkey-parotid and egg-alantoic fluid antigens were provided by Dr. Enders for skin tests which were put on simultaneously. A rather weak correlation was found between skin test and the complement fixation test results.

Because small doses of antigen often serve as remarkably efficient boosters, sera for a second complement fixation test were obtained 8 days after the skin testing. Only 12 persons remained negative when the complement fixation test was thus "boosted" by 2 skin tests, and 88 were positive. This was considered a true "boost" and not a primary antigenic stimulation.

Since it was found possible to "boost" the complement fixation test, a third skin test was applied 20 days after the first to determine whether the skin test also could be "boosted." Three of 10 retested subjects who gave a negative response to the second complement fixation test now gave a positive response to the skin test. Apparently, they had been sensitized by the first immunization; 2 of the 3 subsequently developed mumps. Thus, a negative response to the second complement fixation test is considered the best index of susceptibility.

During the ensuing 30 months, up to the graduation of this class, 1 very doubtful and 5 definite cases of mumps occurred. The 5 definite cases all occurred among the 12 students negative to the "boosted" complement fixation test. (R. E. Wheeler and A. S. Benenson, Am. Pub. Health Assn.)

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From the Note Book

1. On 4 January 1951, Dr. M. J. Whitelaw of Phoenix, Arizona, presented a lecture at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Maryland, on the use of ACTH in the treatment of severe burns. Slides and colored motion picture film were also shown. The form of treatment advocated apparently marks a tremendous advance in the treatment and final results of treatment in the severely burned individual. (Refer to Item 1 of "From the Note Book" in the Medical News Letter, Vol. 16, No. 8, p. 24, and to 30 September '50 Journal of Clinical Endocrinology for more information on this most important development in burn treatment.)

2. A meeting on nutrition will be held at the ONR Branch Office, London, England, 25 January to 1 February 1951. Information on nutrition problems which have collected since the end of World War II will be exchanged. This exchange of knowledge will guide ONR and other agencies within the Armed Forces in the formulation of realistic productive programs in nutritional research. Representatives from the Armed Forces, universities, and industry will attend. (Bio Sciences Group, ONR, Washington, D. C.)

3. Two Army medical officers and a civilian medical consultant have arrived in Korea to evaluate final field tests of new and improved items of medical equipment and new uses of drugs for battle casualties. (PIO, Dept. of Defense, 15 December '50)

4. It is recommended that, with precaution to exclude hypersensitive persons, prophylactic vaccination should be carried out on all those exposed to tularemia as an occupational or recreational hazard. (Editorials and Comments, J.A.M.A., 23 December '50)

5. Sophie Javal, a younger sister of Louis Emile Javal, was the first person in the world to receive orthoptic training. When she was 2 years old, Sickel advised alternate occlusion. At the age of 16 years Von Graefe performed a tenotomy; Javal then began to train her fusion with complete success. (Am. J. Ophth., December '50)

6. A study of histadyl (an antihistamine) in the treatment of common colds did not indicate any evidence that any important effect was observed, either in aborting or ameliorating the cold. (New England J. Med., 21 December '50, R. H. Browning)

7. Each year more than 10,000 Americans die by fire and more than twice that number are burned severely or are disfigured. About 3,500 of the casualties occur on farms. About 70 percent of the fire casualties are women and children. (Indust. Hyg. Digest, October '50)

8. "Special Instrumentation Problems Encountered in Physiological Research Concerning the Heart and Circulation in Man" is discussed in 15 December 1950 Science by E. H. Wood.

9. "The Clinical Specificity of Vulvar Fluorescence" is discussed in the January 1951 Surgery, Gynecology and Obstetrics, by R. C. Benson, L. A. Strait, and C. C. Chapell.

10. The Pan American Sanitary Bureau celebrated its 48th anniversary on December 2, 1950, in Washington, D. C. The Bureau, serving now as the Regional Office of the World Health Organization in the Western Hemisphere, has become a part of the world-wide effort to improve the health of all peoples. (P.H.S., Division of International Health, November-December '50)

11. At the 1950 Convention of the American Public Health Association a brief report on "Civil Defense, Public Health, and Industrial Hygiene" was presented. (Indust. Hyg. Newsletter, January '51, W. J. Lear)

"Studies of Health Hazards in Industry" by J. J. Bloomfield also appears in the same publication.

12. "Problems of Wartime Disease Control" is discussed in December 1950 American Journal of Public Health by W. P. Dearing and J. O. Dean.

13. "The Incidence of a Normal Spinal Fluid in Acute Poliomyelitis" is presented in the December 1950 Journal of Pediatrics by E. E. Nicholls.

14. A convertible shoe, with removable sole, recently patented, permits the wearer to change from a light to heavy sole almost instantly. The shoe and soles are manufactured separately and are attached or separated easily by a special locking device. (Science News Letter, 30 December '50)

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Course in Medical Aspects of Special Weapons and Radioactive Isotopes: The Bureau of Medicine and Surgery announces a course of instruction in Medical Aspects of Special Weapons and Radioactive Isotopes. This course is to be conducted by the Commanding Officer, U. S. Naval Medical School, at the National Naval Medical Center, Bethesda, Maryland. It is scheduled to convene on Monday, 12 February 1951 and continue to 17 February 1951.

The purpose of this course is to present problems likely to be confronted and technics to be employed by medical and dental officers in the field of radioactivity. The subjects will be presented by speakers of outstanding prominence in their specialties; hence, it is assured the presentation will be interesting and informative to all Medical, Dental, Medical Service, and Nurse Corps officers.

This course is conducted primarily for the benefit of inactive Reserve Medical and Dental officers; however, a limited number of officers of the medical department on active duty may be given "Authorization orders" (no expense to the government) in accordance with paragraph 3 of BuPers-BuSandA joint letter 50-362 NDB of 15 May 1950. Inactive Reserve Medical, Dental, Medical Service and Nurse Corps officers residing in the 1st, 3d, 4th, 5th, 6th, 8th, 9th naval districts and Potomac River Naval Command who desire to attend this course should submit their request for training duty to the Commandant of their home naval district. All requests should reach the Commandant's office at the earliest practicable date.

It is desired to invite inactive Reserve officers' attention to the fact that acceptance of orders to attend this course WILL NOT, in any way, increase the possibility of involuntary recall to active duty of the officers concerned. Therefore, inactive Reserve medical department officers are encouraged to take advantage of this opportunity to attend this course on active training duty orders in a pay status. Meals and a limited number of sleeping quarters will be available for those officers who desire such accomodations. (Reserve Div., BuMed)

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List of Recent Reports Issued by Naval Medical Research Activities:

Medical Research Laboratory, U. S. Naval Submarine Base, New London, Conn.

Premodulation Speech Clipping and Filtering: A Consideration of Their Effects on the Intelligibility of Speech, MRL Report No. 155, NM 003 041.21.04, 14 August 1950.

Periscope Acuity at Night, MRL Report No. 157, NM 003 041.39.01, 28 November 1950.

The Microphonic Action of the Cochlea: A Selected Bibliography, MRL Report No. 164, NM 003 041.27.2, 5 December 1950.

Variability of the Auditory Threshold with Time, MRL Report No. 165, NM 003 041.21.06, 5 December 1950.

Studies in Short-Duration Auditory Fatigue. I. Frequency Differences as a Function of Intensity, MRL Report No. 167, NM 003 041.34.01, 8 December 1950.

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BUMED CIRCULAR LETTER 51-1 4 January 1951

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Radon samples; instructions on shipping to National Bureau of Standards

Ref: (a) BuMed Circ. Ltr. No. 50-88

1. The attention of the Bureau has been directed to inconsistencies and errors on the part of some naval activities in submitting radon samples to the Radon Testing Laboratory of the National Bureau of Standards, Washington, D. C.

2. Reference (a) setting forth instructions for collection of air and breath samples for radon content is in no way changed by this letter. Careful sampling, labeling, and shipping of radon samples is mandatory.

3. The following suggestions submitted by the Radon Testing Laboratory of the Bureau of Standards are to be strictly observed:

(1) If an air sample flask is to be used for control or room air sample, or any sample other than breath, remove the filter carefully so as not to bend the spring holder. When the filter has been used replace securely in holder. If, by any chance, the filter is broken in removing or in use, discard all parts. Do not return damaged filters that might become loose in shipment. In such an event, note on the information tag that filter was used and discarded. Do not remove filter from holder if it is not to be used. Read the instruction label on the cover near the filter.

(2) Read carefully the warning and instructions on the shipping tag enclosed in the flask container and fill in completely and legibly the blank spaces on the reverse side.

(3) When requesting air sampling flasks do not ask for more than will be used and returned within approximately 2 weeks after they have been received at the station. If, for any reason one or more flasks have not been used at the end of this time, or will not be used within a few days thereafter they should be returned, unused, to the National Bureau of Standards.

(4) Return all sampling flasks to the Bureau of Standards in the aluminum containers in which they are received <u>with no additional packing</u>. The further packing of these cans in boxes, crates, or other wrapping will not in any way add to the safety of flasks in shipment and frequently delays delivery to the destination.

(5) Upon completion of the collection of an air sample, see that the stopcock on the top of the flask through which the sample has been collected is promptly turned to the closed position. Do not at any time remove the policeman (rubber cap) from the one stem of the stopcock. When the cover has been replaced on the aluminum shipping container preparatory to shipment be sure that all of the six screws which hold it in place are used and securely tightened.

(6) When requesting a shipment of flasks from the National Bureau of Standards, specify if any are to be used for workroom air (not control) samples and the number to be used for this purpose. Flasks shipped for this purpose will be carefully marked, "For Workroom Air Only." Care should be exercised to insure that flasks so marked are not used for breath or control samples.

-C. A. Swanson

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BUMED CIRCULAR LETTER 51-2 4 January 1951

From: Chief, Bureau of Medicine and Surgery
To: All Activities Having Nurse Corps Officers Aboard

Subj: Flight Nurse Training

1. Members of Nurse Corps, U. S. Naval Reserve, are now eligible for Flight Nurse training at Gunter Air Base, Montgomery, Alabama, under the same conditions as members of the Nurse Corps, U. S. Navy.

2. Applications from candidates meeting requirements should be forwarded to BuMed as promptly as possible. Requirements are: High school graduate and graduate of accredited school of nursing with good background of sciences; not over 30 years of age; rank of ENS and LTJG only.

-C. A. Swanson

The above letter will not be printed in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 51-3 5 January 1951

From: Chief, Bureau of Medicine and Surgery
To: Commander in Chief, U. S. Atlantic Fleet
Commander in Chief, U. S. Pacific Fleet
Fleet, Force, Type and Area Commanders, Atlantic and Pacific Ocean Areas
Commandant, Marine Corps

Subj: Venereal Disease; use of oral penicillin as additional prophylaxis for prevention of

Ref: (a) BuMed C/L 50-36 of 17 April 1950

1. Reports on the use of oral penicillin, in accordance with reference (a), have shown oral penicillin to be highly efficacious in the prevention of gonorrhea. Other reports indicate that this method of prophylaxis is not being energetically encouraged by the Medical Department on all ships and stations in authorized areas. This lack of use of a valuable prophylaxis may be due to the extensive tabulation procedures and follow-up which have heretofore been required. In order to lessen the burden connected with the use of oral penicillin, the following modifications to enclosure (1) of reference (a) are authorized, as of 1 January 1951:

a. Section IV B - cancel
b. Section V - cancel
c. Section VI, A, B, C, and D - cancel
d. Enclosure A of enclosure 1 - cancel
e. Enclosure B of enclosure 1 - cancel

2. The above changes cancel the reports previously required for record keeping and transmittal to the Bureau of Medicine and Surgery. In the interest of maintenance of strict supervision of studies now under way, certain reports on the number of tablets used and custodial handling methods may be required by Fleet, Force or Area Commanders now conducting the studies. In order to assure compliance with Section VIII of enclosure (1) to reference (a), it is required that in routine inspections, a review of the oral penicillin prophylaxis program be made in all activities employing oral penicillin as additional prophylaxis. It is further requested that an overall quarterly report of all studies in progress by made by addressees to the Bureau of Medicine and Surgery, Attention: Code 7213, on the first day of April, July, October, and January, both as to results achieved and as to the proper custodial care and dispensing of this antibiotic. In addition, an estimate of number oral penicillin tablets required for the next quarter should be included.

3. It is requested that it be impressed upon all personnel using oral penicillin tablets that these tablets are only effective in the prevention of gonorrhea and do not protect against the other venereal diseases, and that all personnel should use soap and water cleansing as well as all other protective measures that they customarily use. In addition, the men should be informed that once they start using oral penicillin tablets, they should request one following every exposure.

-C. A. Swanson

The above letter will not be printed in the Navy Department Bulletin

BUMED CIRCULAR LETTER 51-4 8 January 1951

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals

Subj: Ration Record, NavMed 36; Instructions Regarding the Preparation and Submission of

Ref: (a) BuMed Cir Ltr 50-58

1. Make the following changes and corrections to the instructions contained in reference (a):

a. Line 15--Enlisted Men, USN and USNR.--Add the following instructions for this line: "Under 'Remarks' show the number of days reported in column III(c) applicable to Enlisted Men, USNR, on continuous active duty in connection with the Naval Reserve Program, as follows:

Line 15: 73130-_____(Continuous Active Duty)"

b. Line 16--Enlisted Men, USNR.--Delete last sentence of instruction for this line and substitute: "Do not report on this line enlisted Reservists disabled on active duty for training who are hospitalized beyond the fourteen-day training period. (See Line 39). Under 'Remarks' analyse the number of days reported under column III(c) applicable to (1) Enlisted Men, USNR, disabled on inactive duty training (Drills); and, (2) Enlisted Men, USNR, disabled on active duty for training (Active Duty for Training), as follows:

Line 16: (1) 73300-_____(Drills)
(2) 73696-_____(Active Duty for Training)"

c. Line 19--Enlisted Women, USN and USNR.--Add the following instructions for this line: "Under 'Remarks' show the number of days reported in column III (c) applicable to Enlisted Women, USNR, on continuous active duty in connection with the Naval Reserve Program, as follows:

Line 19: 73130-_____(Continuous Active Duty)"

d. Line 20--Enlisted Women, USNR.--Delete last sentence of instructions for this line and substitute: "Do not report on this line enlisted Reservists disabled on active duty for training who are hospitalized beyond the fourteen-day training period. (See Line 39). Under 'Remarks' analyse the number of days reported under column III(c) applicable to (1) Enlisted Women, USNR, disabled on inactive duty training (Drills); and, (2) Enlisted Women, USNR, disabled on active duty for training (Active Duty for Training), as follows:

Line 20: (1) 73300-_____(Drills)
(2) 73696-_____(Active Duty for Training)"

e. Line 22--Enlisted Men, USMCR.--Delete last sentence of instructions for this line and substitute: "Do not report on this line enlisted Reservists disabled

on active duty for training who are hospitalized beyond the fourteen-day training period. (See Line 40). Under 'Remarks' analyse the number of days reported under column III(c) applicable to (1) Enlisted Men, USMCR, disabled on inactive duty training (Drills); and, (2) Enlisted Men, USMCR, disabled on active duty for training (Active Duty for Training), as follows:

Line 22: (1)_____(Drills)
(2)_____(Active Duty for Training)"

f. Line 24--Enlisted Women, USMCR.--Delete last sentence of instructions for this line and substitute: "Do not report on this line enlisted Reservists disabled on active duty for training who are hospitalized beyond the fourteen-day training period. (See Line 40). Under 'Remarks' analyse the number of days reported under column III(c) applicable to (1) Enlisted Women, USMCR, disabled on inactive duty training (Drills); and, (2) Enlisted Women, USMCR, disabled on active duty for training (Active Duty for Training), as follows:

Line 24: (1) _____(Drills)
(2) _____(Active Duty for Training)"

g. Note following the instructions for Line 31: Correct the spelling of "Dispersing" in line 7 to "Disbursing."

h. Line 39--USNR, retained beyond active training duty.--Add the following instructions for this line: "Under 'Remarks' show the number of days reported under column III(c) applicable to (1) Enlisted Men, USNR, disabled on active duty for training and hospitalized beyond the fourteen-day training period, (See Line 16); and, (2) Enlisted Women, USNR, disabled on active duty for training and hospitalized beyond the fourteen-day training period, (See Line 20), as follows:

Line 39: (1) 73330_____(Men)
(2) 73330_____(Women)"

i. Line 40--USMCR, retained beyond active training duty.--Add the following instructions for this line: "Under 'Remarks' show the number of days reported under column III(c) applicable to (1) Enlisted Men, USMCR, disabled on active duty for training and hospitalized beyond the fourteen-day training period, (See Line 22); and, (2) Enlisted Women, USMCR, disabled on active duty for training and hospitalized beyond the fourteen-day training period, (See Line 24), as follows:

Line 40: (1)_____(Men)
(2)_____(Women)"

j. Line 66--Foreign Military Personnel.--Delete second sentence of instructions for this line and substitute: Detailed reports are required only in case of hospitalization Foreign Naval Personnel Trainees under the Mutual Defense Assistance Program.

k. Lines 75 & 76--Hospital Corps, enlisted men and women.--Delete last sentence of instructions for these lines and substitute: "Under 'Remarks' show

the number of subsistence days applicable to line 75 for (1) Enlisted Men, USNR, on active duty for training; and, (2) Enlisted Men, USNR, on continuous active duty; and the number of subsistence days applicable to line 76 for (1) Enlisted Women, USNR, on active duty for training; and, (2) Enlisted Women, USNR, on continuous active duty."

l. Lines 79 & 80--Other Naval Enlisted men and women.--Delete last sentence of instructions for these lines and substitute: "Under 'Remarks' show the number of subsistence days applicable to Line 79 for (1) Enlisted Men, USNR, on active duty for training; and, (2) Enlisted Men, USNR, on continuous active duty; and the number of subsistence days applicable to Line 80 for (1) Enlisted Women, USNR, on active duty for training; and, (2) Enlisted Women, USNR, on continuous active duty."

m. Line 81--Enlisted Marine Corps Personnel.--Delete the words "other than" in the first sentence, and substitute the words "attached to the."

n. Lines 92 & 93--Hospital Corps, enlisted men and women.--Delete last sentence of instructions for these lines and substitute: "Under 'Remarks' show the number of subsistence days applicable to Line 92 for Enlisted Men, USNR, on active duty for training; and the number of subsistence days applicable to Line 93 for Enlisted Women, USNR, on active duty for training."

o. Lines 96 & 97--Other Naval Enlisted Men and Women.--Add the following instructions for these lines: "Under 'Remarks' show the number of subsistence days applicable to line 96 for Enlisted Men, USNR, on active duty for training; and the number of subsistence days applicable to line 97 for Enlisted Women, USNR, on active duty for training."

2. In order that this Bureau may be enabled to provide accurate information to other cognizant Bureaus for allocation of charges to expenditure accounts affected, addressees shall analyse the numbers of days reported in Column IV(c) of the Ration Record, NavMed 36 for the month ending 31 January 1951 in accordance with the modified instructions as prescribed in paragraph above.

-C. A. Swanson

The above letter will not be printed in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 51-5 10 January 1951

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Radiological Safety Regulations; modification of

Ref: (a) BuMed Circular Letter No. 48-10

1. Enclosure (A) to reference (a), Navy Department Radiological Safety Regulations, established a maximum permissible level for total or limited body exposure to external radiation of "0.1 rem in any 24-hour period". It is directed that this tolerance level be changed to read "0.3 r in any weekly period", wherever it appears in subject regulations.

2. Effective 1 January 1951, the miscellaneous reports required by paragraph 11.2 of enclosure (A) to reference (a) are hereby cancelled. Future photodosimetry reports will be submitted on an annual basis. Instructions will be promulgated in a pending complete revision of subject regulations.

3. The provisions of paragraph 2 above do not preclude the submission of photodosimetry data as required by the Industrial Health Data Sheet, NavMed Form 576 (Rev 1951) by those activities having an Industrial Health Program.

4. Attention is invited to paragraph 16-58 (5), Manual of the Medical Department which requires that the recording of radiological exposure in the health record be on a monthly basis.

-C. A. Swanson

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BUMED CIRCULAR LETTER 51-6 11 January 1951

From: Chief, Bureau of Medicine and Surgery
To: Commanding Officers, U. S. Naval Hospitals

Subj: Graduate Medical Training Program (Internships and Residencies)

Ref: (a) BuMed Circular Letter No. 49-50
(b) BuMed Circular Letter No. 49-65
(c) Essentials of an Approved Internship (Revised to Dec 1948; originally published JAMA 72:1757 (June 14) 1919)
(d) Essentials of Approved Residencies and Fellowships (Revised to June 1950; originally published JAMA 90:922 (March 24) 1928)
(e) BuPers Circular Letter No. 49-50 dtd 7 Apr 1950: NDB 50-264

1. This cancels and supersedes references (a) and (b).

2. Reference (c), as prepared by the Council on Medical Education and Hospitals of the American Medical Association, is to serve as the standard and basis of approval for 12 months' rotating internships in naval hospitals approved for intern training. Naval internships shall be conducted so as to insure participants' eligibility for medical state licensure upon completion of the intern year and shall

include periods of time on services as indicated below. Rotation between services need not necessarily be in the order listed.

Surgical Service including Urology and Orthopedics . . . . . .4 months
(To include minimum of 6 appendectomies, 6 hernias; and serve as ass't in 12 other major operations. Administer 15 anesthetics of various types under supervision)

Medical Service including Pediatrics and Contagious Diseases. . . . . .4 months

Obstetrical and Gynecological Service. . . . . .2 months
(Observe 25 deliveries and accomplish 12 deliveries under supervision)

Electives . . . . . .2 months
(To be selected as either two assignments of 1 month each, or as one 2 months' assignment from among the following specialties: Psychiatry, Neurology, Laboratory, Ophthalmology, Otorhinolaryngology, and Physical Medicine or additional Medicine or Surgery. Note: Interns intending to apply for Commonwealth of Pennsylvania licensure must include 1 month of laboratory in elective period.

In addition to fulfilling above mandatory and elective assignments, each intern will be required to observe a minimum of 36 necroscopies during his intern year.

3. Reference (d), as prepared by the Council on Medical Education and Hospitals of the American Medical Association, is to serve as the standard and basis for approval for residencies in naval hospitals. Eligibility requirements for assignment to residency training are stated in reference (e). Requests for residency training may be submitted to the Bureau of Medicine and Surgery by eligible medical officers for consideration by the Advisory Board, which meets semiannually during the first week of April and the first week of October.

4. Copies of reference (c) and (d) may be obtained on application to BuMed.

-C. A. Swanson

The above letter will not be printed in the Navy Department Bulletin.

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BUMED CIRCULAR LETTER 51-7 11 January 1951

From: Chief, Bureau of Medicine and Surgery
To: Commandants, Naval Districts and River Naval Commands
Commanding Officers, U. S. Naval Receiving Stations

Subj: Photofluorographic examinations of the chests of naval personnel

Ref: (a) Paragraph 21103, Manual of the Medical Department
(b) BuMed Circular Letter No. 50-5 of 13 Jan 1950

Encl: (1) List of activities having photofluorographic equipment

1. It is requested that the Health Records of all individuals reporting at receiving stations for permanent assignment or for further transfer be examined to determine whether routine roentgenographic examinations are required. When such examinations are required steps shall be taken to make them. In accordance with reference (a) a routine roentgenographic examination of the chest should be made when practicable as part of the physical examination to determine physical fitness for enlistment, appointment, active duty, at annual intervals while on active duty, and at time of separation from the service.

2. Reserve personnel recalled to active duty commonly have not received such examination prior to reporting at a receiving station, and the ship or station to which they are transferred frequently has no ready access to photofluorographic equipment. Also, personnel of longer service may have missed their annual examination and be on their way overseas; or they may be returning to the continental United States after tours of duty overseas, often in regions of high tuberculosis endemicity.

3. Commandants of Naval Districts are requested to advise this Bureau, Code 7212, if there is need for the transfer of equipment in order to effect these examinations. Present locations of photofluorographic units are listed in Enclosure (1).

-C. A. Swanson

The above letter will not be printed in the Navy Department Bulletin.

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Notice: Due to the increasing deficiency of critical materials it is possible to provide binders for Volume 16 of the Medical News Letter to only a limited number of recipients. File folders are suggested as a satisfactory substitute.

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